END-RESULT STUDY OF DEBRIDEMENT OF BONE-JOINT TUBERCULOUS FOCI (Intermediary Report)

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END-RESULT STUDY OF DEBRIDEMENT OF BONE-JOINT TUBERCULOUS FOCI

(Intermediary Report)

by

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Five years have passed since the first introduction of our form of operation, debridement of bone-joint tuberculous foci performed under the administration of streptomycin. The form of operation advocated in 1951 by us, met with more or less apprehension from authorities, but nowadays, with the recognition of freedom from danger and good primary results obtained in the operation, physicians who apply this form of operation have increased in number. Moreover, some of them are advocating the necessity of using this method. Thus, at the present moment, when this form of operation shows great tendencies to spread throughout Japan and abroad, it seems to be most important to discuss precisely the results of the operation, and to determine the proper indications for the operation. Here, the authors will try, on the grounds of clinical experience with several cases, to make a strict discussion of the idea of our debridement of bone-joint tuberculous foci ; i. e. the operative promotion and assistance of the natural healing process, self-purification in the affected foci.

There are at present over 200 operated cases in our clinic, but the prsesent paper will report only on an evaluation of the intermediary end-results of 108 out of 176 cases, which have been observed for one to five years. Anatomical distribution of the lesions is shown in Table I.

Table. I

Location of lesions	Cases observed
Spinal caries	32 of 55 cases
Hip joint tuberculosis	19 of 36 cases
Foot joint tuberculosis	22 of 30 cases
Knee joint tuberculosis	10 of 18 cases
Sacroiliac joint tuberculosis	13 of 14 cases
and others	12 of 23 cases
Total number of lesions	108 of 176 cases (61.4%)

The authors investigated statistically the results, in regard to the clinical and radiological findings, as well as the modus of present life of the cases. The criteria for the evaluation of the results are as follows :

1) Excellent : convalescence completed and no restriction of social activities.

2) Good : great improvement of local and general conditions, being still kept in convalescence.

3) Unimproved : degradation or recurrence of disease.

4) Death.

Table. II

Results obtained	Cases	Per cent	
Excellent :	58	53.7	90.8
Good :	40	37.1	
Unimproved :	8	7.4	
Death :	2	1.8	

Results obtained are shown in Table II, and are favorable in 90.8% (sum of Excellent 53.7% and Good 37.1%).

One of the two cases who died was a child with hip joint tuberculosis, who died from post-operative shock, and the other was an adult with spinal caries complicated by epidural abscess, who died from tuberculous meningitis five months after operation. Both of them were in a florid stage of the disease, which should be a contra-indication for the operation.

The results arranged in the post-operative period, as shown in Table III, reveal that the longer the post-operative course, the better become the results.

Table. III

Results obtained	Post-operative course			
	4 years	3 years	2 years	1 year
Excellent :	10 (91.0%)	22 (73.4%)	23 (49.0%)	3 (15.0%)
Good :	1 (9.0%)	4 (13.3%)	19 (40.0%)	16 (80.0%)
Unimproved :		4(13.3%)	4 (8.5%)	
Death :			1 (2.1%)	1 (5.0%)
Total number of the cases	11	30	47	20

And also the results arranged in location of the lesions, as shown in Table IV, reveal that the results obtained in the treatment of small joints are in general very favorable, and the most difficult is the treatment of the spinal caries, the results of which are excellent in 31.2%, good in 56.3%, unimproved in 9.4%, death in 3.1%.

Table. IV

Results obtained	Location of lesions					
	Spine	Hip joint	Foot joint	Knee joinnt	Sacroiliac joint	Others
Excellent	10(31.2%)	9(47.4%)	16(72.7%)	5(50.0%)	8(61.5%)	9(75.0%)
Good	18(56.3%)	8(42.2%)	5(22.7%)	5(50.0%)	4(30.8%)	1(8.3%)
Unimproved	3(9.4%)	1(5.2%)	1(4.6%)		1(7.7%)	2(16.7%)
Death	1(3.1%)	1(5.2%)				
Total number of cases	32	19	22	10	13	12

In regard to the general condition : tuberculosis of lung developed only in 1.8% post-operatively and in most of the cases was much improved or remained in the similar state as before. Pre-operatively the erythrocyte sedimentation rate was elevated in a majority of the cases, but at present most of them are normal (Table V.). These facts reveal that the operation can improve the general condition of the patients.

Table. V

Erythrocyte sedimentation rate	Pre-operative	At present
Elevated (over 30mm)	55.0%	9.9%
Moderate (15 ~ 29 mm)	23.0%	28.8%
Normal (0 ~ 14 mm)	22.0%	61.7%

In regard to local signs, abscesses were complications in 51.0% of the cases in the pre-operative period, but most of them have healed and are present only in 6.4 % of the cases. Also sinuses were complications in 33.0% of the cases in the pre-operative period, but now they are present in only 2.8% of the cases. In the healing state of operative wounds, primary closure occured in 75.0% of the cases and secondary closure in 25.0%, but none of the cases showed a transition to permanent sinus formation. The operative wounds for foot and knee joint tuberculosis show a greater tendency to close secondarily than those in other areas (Table VI).

Table. VI

Closure of the operated wounds	Spine	Hip joint	Foot joint	Knee joint	Sacroiliac joint	Others
Primary closure	27(90.0%)	17(89.5%)	10(45.5%)	6(60.0%)	11(84.6%)	10(83.3%)
Secondary closure	5(10.0%)	2(10.5%)	12(54.5%)	4(40.0%)	2(15.4%)	2(16.7%)
Number of total cases	32	19	22	10	13	12

So special care should be taken in operations on the foot and knee joint.

In regard to the radiological healing of this disease in the post-operative period, spinal caries showed block formation of vertebrae in 66.6%, which became more marked in proportion to the length of time after the operation, sklerosing around the foci or formation of osteophytes were present in 34.4% of the cases, but developing destruction or sequester formation could be observed in 6.6% of the cases. Therefore, the procedure of debridement should be performed completely. In tuberculosis of other joints, bone atrophy was observed in only 1.0%, developing destruction or sequester formation in 4.2% of the cases. A majority of the cases (94.8%) showed marked sklerosing around the foci, and 39.0% among them complete bony ankylosis. Mobile joints without recurrence of the disease were observed in only 1.2%.

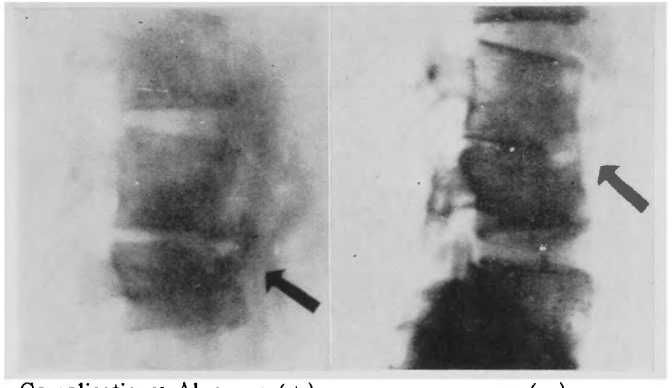
During the post-operative treatment, the number of cases treated by immobiliza-

Table. VII

Post-operative course	Immobilized	
	Percent with brace or plaster cast	Percent no longer wearing brace or cast
1 to 2 years	78.0 %	22.0 %
2 to 3 years	41.0 %	59.0 %
3 to 4 years	17.0 %	83.0 %
4 to 5 years	0	100.0%

Fig. 1 S. S., male, age 20 years.

Before operation 12 months after operation

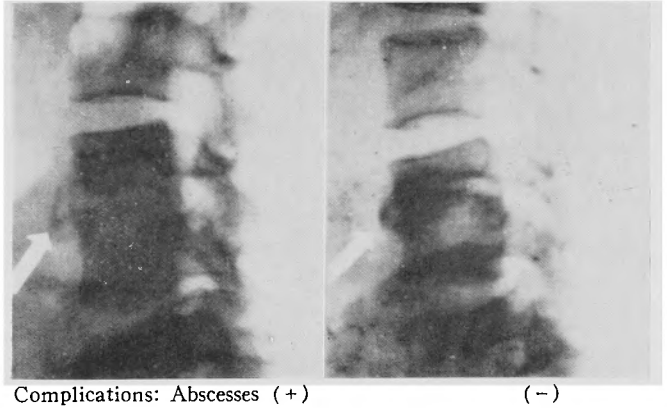


Complications: Abscesses (+) (−)

Erythrocyte sedimentation rate 23.25mm 11.5mm

Fig. 2 S. O., female, age 38 years.

Before operation 13 months after operation



Complications: Abscesses (+) (−)

Erythrocyte sedimentation rate 39.0mm 16.0mm

Fig. 3 S. S., male, age 25 years.

Before operation 15 months after operation

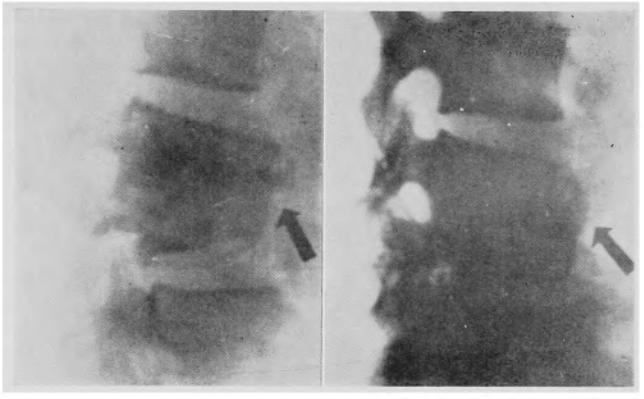
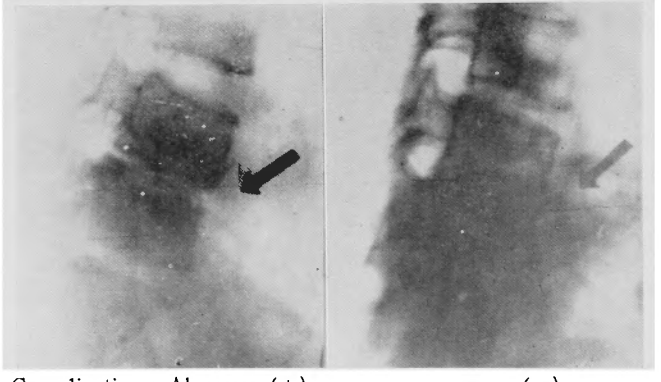


Fig. 4 I. Y., female, age 23 years.

Before operation 17 months after operation



Complications: Abscesses (+) (−)

Sini (+) (−)

Erythrocyte sedimentation rate 81.25mm 22.0mm

Fig. 5 M. S., male, age 22 years.

Before operation 3 years after operation

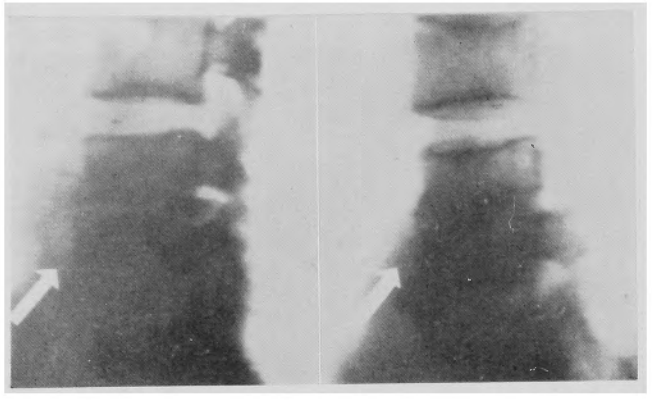
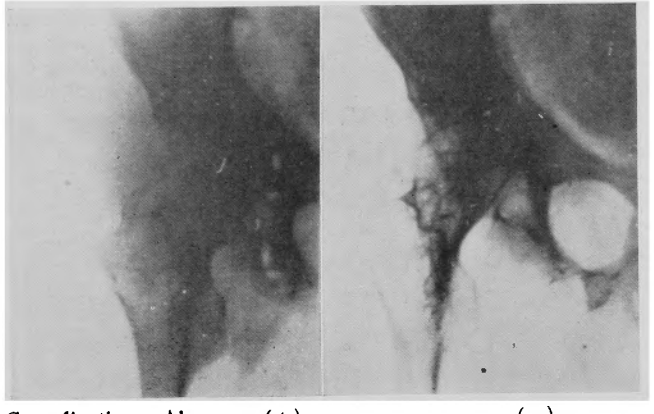


Fig. 6 J. M., male, age 15 years.

Before operation 12 months after operation



Complications:	Abscesses	(+)	(−)
	Sini	(+)	(−)
Erythrocyte sedimentation rate		35.5mm	8.0mm

Fig. 7 Y. H., female, age 21 years.

Before operation 13 months after operation

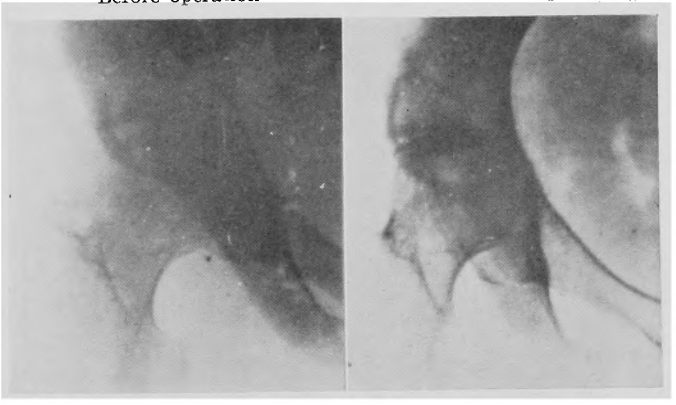


Fig. 8 M. A., male, age 14 years.

Before operation 12 months after operation

Complications:	Abscesses	(+)	(−)
	Sini	(+)	(−)

Fig. 9 A. M., female, age 25 years.

Before operation 29 months after operation

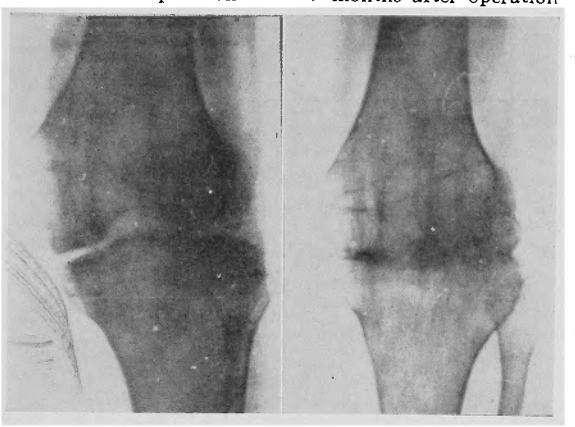


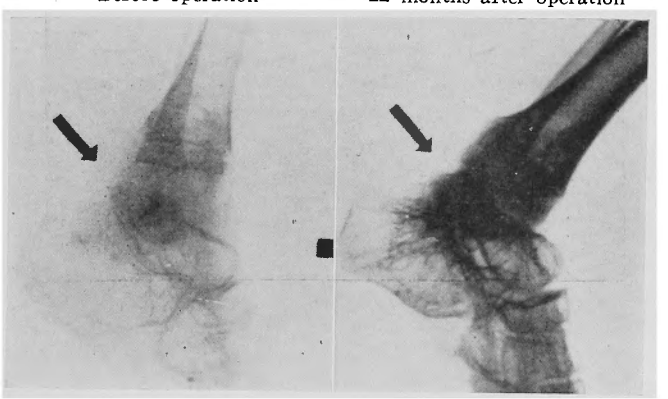
Fig. 10 R. M., female, age 21 years.

Before operation 40 months after operation

Erythrocyte sedimentation rate	37.25mm	35.0mm

Fig. 11 H. S., male, age 12 years.

Before operation 22 months after operation



Complications:	Sini	(+)	(−)

Fig. 12 S. S., female, age 2 years.

Before operation 51 months after operation

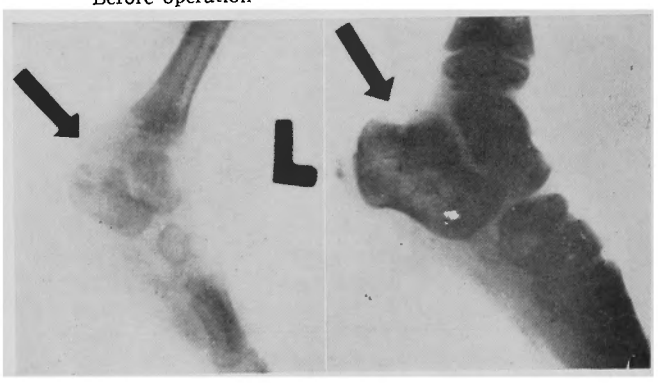
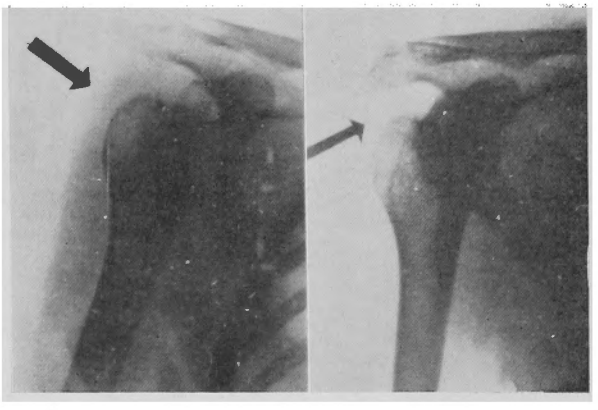


Fig. 13 T. U., female, age 25 years.

Before operation 28 months after operation



Complications: Abscesses (+) (−)

tion with brace or plaster cast decreased in proportion to the length of time after the operation (Table VII). This fact reveals that immobilization becomes unnecessary with the period of the post-operative course and greatly encourages us.

From the above, our focal debridement combined with streptomycin is, as far as operative indications can be strictly observed, a quite safe and rational operation, great developments in which can be expected in the future.

Results obtained in several cases treated by focal debridement are illustrated in the following pictures: (Fig.1—13).

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